Argument

Reconsideration of this application as amended herein is respectfully requested.

On June 30, 2006, Applicant filed a Response to the Office Action dated March 31, 2006. With this Response, Applicant submitted a Declaration under Rule 132 by Susan Buchanan, President of Triumph Sport, Inc., licensee of this Application. In this Declaration, Ms Buchanan recounts the experience of Triumph Sport in trying to promote Nitinol skate blades. This Declaration is powerful evidence refuting the Examiner's conclusion that the use of 60 Nitinol would be obvious to a person of ordinary skill in the art for use in skate blades. However, the Examiner has not addressed this Declaration in his subsequent Office Actions, and indeed has not even acknowledged receiving it, despite a detailed discussion of it in the June 30, 2006 Response. See MPEP 716.01(B). Moreover, in a Request for Clarification filed by Applicant on Oct. 20, 2006, following receipt of the Outstanding Office Action dated Oct. 17, 2006, Applicant specifically requested clarification whether the Declaration had been entered and considered. This Request was ignored. Accordingly, Applicant now resubmits a copy of this Declaration and renews his request that the Examiner address it.

Claims 1-4 and 13-16 have been rejected under 35 USC 103 as unpatentable over Applicant's own disclosure in view of Abkowitz et al (P/N 6,318,738) on the ground that Applicant's disclosure states that certain elements of an ice skate are conventional and well known, and that Abkowitz discloses a titanium alloy skate blade, and therefore it would have been obvious to make an ice skate blade out of 60 Nitinol.

Abkowitz specifies skate blade materials made of a titanium alloy "which is reinforced by a hard constituent" (col 2, lines 5-6). He specifically mentions an alloy of titanium, aluminum and vanadium with titanium carbide particles dispersed therein. He also discloses a titanium skate blade clad in "high hardness" oxidized zirconium (col 3, lines 17-18). He states that these materials offer high hardness for good edge

retention and wear resistance. Abkowitz does not disclose or suggest the use of 60 Nitinol as a skate blade material, even though it was known at the time of his invention.

Applicant asserts that it would not have been obvious to a person of ordinary skill in the art to use Type 60 Nitinol for an ice skate blade because the physical properties of 60 Nitinol, specifically its low modulus and its low load resistance in conventional three-point bending tests, and also its low hardness, appear to make it a worse candidate for skate blades than conventional steel. High hardness and "strength" are factors that Abkowitz cited as desirable in his skate blade materials but are lacking in 60 Nitinol (at least in some definitions of "strength", such as conventional three-point bending tests used by the industry), so Abkowitz actually teaches away from the use of a material like 60 Nitinol. Moreover, 60 Nitinol is much more expensive than steel and is much harder to cut and sharpen, so making blades out of 60 Nitinol is much more difficult, and sharpening the blades with conventional grinding wheels is almost impossible. These considerations would be enough to convince a person of ordinary skill in the art that 60 Nitinol would be a poor candidate for skate blade material.

Even if a person of ordinary skill in the art were determined enough to actually make and test skate blades made of 60 Nitinol, in spite of the evident factors noted above indicating the undesirability of 60 Nitinol as a skate blade material, he would quickly conclude that it would not be suitable for skate blades. Type 60 Nitinol skate blades feel different to skaters than conventional steel blades, as explained in detail in Ms. Bucanan's Rule 132 Declaration. They feel like dull steel blades and skaters feel unstable on the blades, even when standing in a neutral position. It takes several hours to get used to the different way skates with 60 Nitinol blades feel on the ice and, without knowing that the performance will be better after becoming accustomed to the way the Nitinol skate blades feel, a person of ordinary skill in the art would reject them as inferior to convention skate blades.

These notions about how those of ordinary skill in the art would react to the idea of using 60 Nitinol for skate blades are not merely Applicant's opinions. They have, unfortunately, been proven in painful experience during the promotion efforts of

Applicant's licensee, Triumph Sport, Inc., as set forth in detail in the attached Declaration under Rule 132 by the President of Triumph Sport, Inc., Susan Buchanan, resubmitted with this Amendment. This Declaration describes the reaction of CCM, also known as Sport Maska, Inc., one of the biggest skate manufacturers in the world, to the offer of Nitinol skate blades for CCM's skates. It should be noted that CCM did not identify 60 Nitinol as a potential skate blade material even though it had existed since the early 1960's; it was brought to their attention by Triumph Sport. CCM did not need to discover how to make skate blades from 60 Nitinol; the sample blades were supplied by Triumph Sport from sample supplied by Applicant. CCM did not have to learn how to sharpen the 60 Nitinol blades; the special grinding wheels and processes were supplied by Triumph Sport. Yet, even after being lead by the hand through all the difficult steps that the Examiner assumes to have been obvious to a person of ordinary skill in the art, CCM (some of the world's foremost experts in skating) concluded that 60 Nitinol skates do not afford any significant benefits, and they declined to consider that matter any further. CCM were not the only experts who declined the offer by Triumph Sport to adopt 60 Nitinol skate blades.

If experts like CCM and others in the industry can conclude that 60 Nitinol is not a suitable material for skate blades, even after having the benefits explained to them in detail and having sample blades provided, Applicant can only conclude that a person of ordinary skill in the art, lacking the extensive experience and accumulated knowledge of a leader in the skating industry, would not come to any wiser conclusion. There is no better test of what is obvious to a person of ordinary skill in the art than the reaction of experts in the art. The test of obviousness is not the perception of extraordinary visionaries like Applicant and Applicant's licensee Susan Buchanan, but what would have been obvious to persons of ordinary skill in the art. Applicant believes that the experts in the skating industry have proven conclusively that the use of 60 Nitinol for skate blades was unobvious, even after being introduced to it in great detail, and it certainly would have been unobvious to a person of ordinary skill in the art just because it was one of hundreds of thousands of potentially usable materials that existed.

Claims 6-12 have been rejected under 35 USC 103 as unpatentable over a publication entitled "Fabrication of Nitinol Materials and Components" authored by Ming Wu. Wu's description deals with Type 55 Nitinol, that is, one titanium atom for each nickel atom. That is a weight ratio of 55/45 for nickel/titanium, since nickel is more dense than titanium. Wu does not disclose processes for Type 60 Nitinol. Moreover, as noted above for claims 1-4 and 13-16, the use of 60 Nitinol for skate blades, as claimed in claims 6-12, would not have obvious to a person of ordinary skill in the art at the time this invention was made.

Wu's disclosure does not teach the percentage reduction in 60 Nitinol claimed in claim 6, and he does not teach immediate quenching of ice skate blades to ambient temperature after heating to 600°C-800°C to produce ice skate blades to a hardness of about 48-53RC, and he does not teach grinding the 60 Nitinol blade to a desired profile. In fact, Wu teaches nothing about 60 Nitinol. Wu is not a reference for a single element of the subject matter claimed in claim 6.

Since Wu does not teach anything about Type 60 Nitinol or about the use of Type 60 Nitinol in skate blades, it does not seem fruitful to list all the other details about the processing of Type 60 Nitinol in claims 7-12 that Wu does not teach. Process steps in the heat treating of metals that include heating, cooling and aging have been used for centuries, and still are being perfected for particular materials with specific temperatures, time of treatment, time held at different temperatures, and rates of heating and cooling. To say that one or another of the process parameters is known for a different material, and that therefore the entire process must be obvious, ignores the reality that the slightest variation in a one of the steps in a heat treating process can produce vastly different properties in a particular material.

At Applicant's request, the Examiner has provided a specific identification of where in Wu he thinks the teaching of Applicant's process occurs. This is very useful because Applicant can now address the issue specifically rather than trying to guess how the Examiner was interpreting a reference that Applicant considered to lack any teaching of his invention. Addressing the first of the four items that the Examiner finds in the Wu reference paper, Wu notes that 55 Nitinol can be extruded as billets

and tubes at temperatures of 800°C -950°C. This is a perfect example of using a process that works for one material to assert the obviousness for that process step for a different material. 60 Nitinol cannot be extruded. Period. It has been tried by many people and has never been successful. The Examiner is invited to disprove this assertion using the vast resources of the U.S. Government at his disposal. To Applicant's knowledge, it has never been done, and certainly not in any practical way using the step noted by Wu for 55 Nitinol. 60 Nitinol tubing would be very valuable, especially if given the properties developed by Applicant, but it does not exist. 60 Nitinol is much different in its properties from 55 Nitinol and the same process steps that work for 55 Nitinol do not work for 60 Nitinol. Just because they are both called "Nitinol" (a name derived by the scientists at the Naval Ordnance Laboratory in White Oak, MD from the chemical abbreviation of its constituent materials: nickel [Ni] and titanium [Ti] and the abbreviation of the laboratory where it was invented [NOL], hence NiTiNOL) does not mean that all Nitinol materials have the same properties or respond in any similar way to the same process steps. In fact, as is known by experts in the art, they do not.

The second item noted by the Examiner, annealing at temperatures between 600°C and 800°C for inter-pass reheating during rolling of 55 Nitinol, is not the step claimed in claim 6. Claim 6 calls for:

> heating said blanks to between 600°C to about 800°C and **immediately quenching said blanks to ambient temperature to produce blanks having a hardness of about 48-53RC**

This is not inter-pass reheating during rolling. It is heating to a temperature range in preparation for quenching. Wu does not teach this step for 55 Nitinol and certainly does not teach it (or anything else) about 60 Nitinol. The Examiner has chosen an isolate portion of a reference used for a different part of a different process to show that the entire step, not discussed or suggested in any way by the reference, is obvious. Why does the Examiner ignore the parts of the step that are not taught by the reference? Why does he assert that a temperature range for a different material used for a different process makes the entire step of Applicant's

process, used for a different purpose and using the ignored second portion of the step, obvious. Applicant is mystified by the Examiner's action.

The third item noted by the Examiner, heating said part to a temperature above 700°C, is a step in a different process, not the making of the blades, but the straightening of the blades. This is claimed in claim 10, as follows:

A method of forming a part made of Type 60 Nitinol to a desired shape, comprising:
heating said part to a temperature above 700°C;
placing said part between matched dies having a die interface profile corresponding to said desired shape; and
holding said part at said temperature for a period of at least about 15 ~~miuntes~~minutes.

Wu teaches a heat treating process to give Nitinol "superelastic" and shape memory properties, including solution heating at temperatures between 600°C and 900°C. He teaches nothing about holding a part between matched dies or holding for any period of time. Claim 10 does not just claim a temperature. It claims a particular process for a particular purpose. Wu teaches a different process for a different purpose. Applicant does not believe that Wu is can properly be interpreted as a teaching of the process of claim 10.

The Examiner has asserted that Wu is a teaching of processes about 60 Nitinol because he refers to "alloys with greater than 55.5 weight percent nickel. It is true that there is a type of Nitinol having 56 weight percent nickel, and the process steps for this material are similar to the process steps for 55 Nitinol. However, Wu does not ever claim that his teachings apply to the very different properties of 60 Nitinol, and in fact they do not.

New claims 16-20 have been added to claim the invention in terms taken verbatim from the specification. They depend from claim 13 which, as noted above, should be allowable, so these claims should be patentable by virtue of the patentability of claim 13. In addition, these claims add features that are themselves patentable over the cited prior art since neither Abkowitz nor Wu teach the claimed properties that are superior to steel skate blades, which are the current standard for skate blades.

Accordingly, Applicant believes that the claims in this application do define subject matter that is patentable over the prior art and respectfully requests that the Examiner pass this application to issue.

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Respectfully submitted,

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